



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/516,502	05/24/2005	Hannu Paarni	0365-0615PUS1	5129
2292 7590 08/20/2008 BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747				
EXAMINER LE, HUYEN D				
ART UNIT 2615		PAPER NUMBER		
NOTIFICATION DATE 08/20/2008		DELIVERY MODE ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary

Application No.

10/516,502

Applicant(s)

PAARNI ET AL.

Examiner

HUYEN D. LE

Art Unit

2615

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/ICE)
Paper No(s)/Mail Date 12/02/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claims 4, 8 and 12 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim can not depend from any other multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claims 4, 8 and 12 have not been further treated on the merits.
2. Claim 6 is objected to because of the following: on line 1, "6" should be changed to --5-- since it appears that claim 6 is dependent from claim 5. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(c), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-3, 5-7 and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Minervini (U.S. patent 7,166,910) in view of Loeppert et al. (U.S. patent 5,870,482).

Regarding claims 1, 5 and 9, Minervini teaches a method and apparatus of an acoustically active element which includes an internal chamber (18), and a transducer (12, 58) arranged acoustically in connection with the internal chamber. Minervini further shows the internal chamber which is formed inside the multi-layer circuit board construction as claimed (figures 4, 5, 7, 8, 9, 10).

Minervini does not specifically teach a membrane being capable of vibrating as claimed. However, Minervini does teach that a silicon condenser microphone can be used for the transducer (12, see col. 3, lines 34-35).

Loeppert teaches a silicon condenser microphone (10) which includes a diaphragm (12).

Since Minervini does not restrict to any type of transducer for the microphone package; it therefore would have been obvious to one skilled in the art to provide a transducer with a diaphragm, as taught by Loeppert, in the microphone package of Minervini for an alternate choice.

Minervini further teaches the multilayer circuit board which is formed of alternating insulating and conducting layers (46, 44), contacts being formed between the conducting layers (44) and conducting structures as claimed (figures 4, 5, 7, 8, 9, 10).

Regarding claims 2, 7 and 10, the vibrating membrane (12) in the transducer of Minervini in view of Loeppert is stretched on top of an annular element (84, see figures 27-29 of Minervini) as claimed.

Regarding claims 3 and 11, it is obvious that the diaphragm (12) in the silicon condenser transducer of Minervini in view of Loeppert is electrically charged.

Regarding claim 6, Minervini does not specifically teach that the internal chamber (18) which is open using the microvia technique as claimed. However, Minervini does not restrict to any methods or techniques to form or open the chamber (18, col. 3, lines 45-55) to the surface of a circuit board (28).

Therefore, it would have been obvious to one skilled in the art to provide any methods or techniques to open the chamber to the surface of the circuit board such as the microvia technique for an alternate choice and better forming a back volume for the transducer.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Berstein (U.S. patent 5,452,268) teaches a construction of a capacitance acoustic transducer.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to HUYEN D. LE whose telephone number is (571) 272-7502. The examiner can normally be reached on 9:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, SUHAN NI can be reached on (571) 272-7505. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/HUYEN D. LE/
Primary Examiner, Art Unit 2615

HL
August 13, 2008